REMARKS

I. Introduction

In response to the Office Action dated September 19, 2006, 2005, claims 1, 12, 24, 35, and 47 have been amended. Claims 1-3, 5-15, 17-27, 29-38, 40-50, and 52-58 remain in the application. Re-examination and re-consideration of the application, as amended, is requested.

II. Provisional Double Patenting Rejections

Claims 1, 12, 24, 35, and 47 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 8, 15, and 22 of copending Application No. 10/085,920. Applicants note that the subject matter of the copending application and the present application may change thereby obviating the need for the submission of a terminal disclaimer. Applicants may be willing to submit a terminal disclaimer should one become necessary. However, at this time, Applicants traverse the rejection while reserving the right to submit a terminal disclaimer at a later date and upon the determination of allowable subject matter.

III. Prior Art Rejections

In paragraphs (1)-(8) of the Office Action, claims 1-59 were rejected under 35 U.S.C. §103(a) as being unpatentable over Cohen et al. (Cohen), U.S. Patent No. 5,282,249, in view of Kocher, U.S. Patent No. 6,289,455.

Applicant traverses the rejections for one or more of the following reasons:

(1) Neither Cohen nor Kocher teach, disclose or suggest a single microprocessor that controls multiple nonvolatile memory components that are physically separate and independently controlled; and

(2) Neither Cohen nor Kocher teach, disclose or suggest a single microprocessor that controls multiple nonvolatile memory components with separate memory access control restrictions.

Independent claims 1, 12, 24, 35, and 47 are generally directed to controlling access to digital services. More specifically, digital services are processed in a control center, uplinked to a satellite, and received at a subscriber receiver station where they are processed by a conditional access module (CAM). The claims further provide specific limitations relating to the CAM. In this regard, the CAM has a system bus, and a plurality of physically separate and independently controlled

nonvolatile memory components. Access control to the digital services is distributed among the multiple nonvolatile memory components. In addition, a microprocessor is coupled to each of the nonvolatile memory components. The microprocessor has various capabilities including the ability to use state information in the memory components to provide desired functionality and enforce a security policy for accessing the digital services. As amended, the single microprocessor further controls each of the nonvolatile memory components. Further, the memory components each have separate memory access and control restrictions.

Accordingly, not only are each of the multiple nonvolatile memory components independently controlled, but they have separate memory access and control restrictions while being controlled by the same microprocessor.

The cited references do not teach nor suggest these various elements of Applicants' independent claims.

The Office Action admits Cohen's lack of teaching of multiple nonvolatile memory components as claimed. To teach these elements of the claims, the Office Action relies on Kocher col. 21, line 13 to col. 22 line 25 and col. 24, line 10 to line 30. Applicants respectfully disagree with and traverse such rejections. Namely, these portions of Kocher completely fail to describe multiple nonvolatile memory components organized in the manner claimed. Instead, Kocher merely describes multiple microprocessors that each may have its own RAM, ROM, and EEPROM (see col. 21, lines 34-40). However, the ability for a single microprocessor to independently control separate nonvolatile memory components is not taught or disclosed, explicitly or implicitly, in Kocher. The use of multiple nonvolatile memory components as claimed provides significant advantages over the prior art including Kocher. Paragraph [0062] of the application as filed describes some of such advantages:

> **[0062]** FIG. 6 illustrates the architecture of a CAM 512 in accordance with one or more embodiments of the invention. The CAM 512 contains a microprocessor 602, volatile memory components 604 (e.g., random access memory [RAM]), a plurality of nonvolatile memory components 606 (e.g., electrical erasable programmable read only memory [EEPROM], erasable programmable read only memory [EPROM], or batter packed RAM), and a system input/output module 608, all of which are communicatively coupled to a system bus 610. As illustrated, a plurality of nonvolatile memory components 606 are utilized. Using this approach, each nonvolatile memory component 606 has separate memory access control restrictions and may implement entirely unique memory access control logic. This forces an

> intruder to embark on multiple separate attacks to compromise each memory component 606.

As can be seen, such an approach forces an intruder to attempt multiple separate attacks in order to access each separate memory component and gain access to the digital services. However, Kocher does not even remotely allude to such a benefit or capability. Instead, Kocher merely describes two microprocessors – one serves as an interface control processor (ICP) that communicates with a second processor that is a cryptofirewall that controls access to a protected memory (see col. 7, lines 54-60 and col. 21, lines 34-54). However, such a teaching completely and totally fails to describe or suggest a single microprocessor that access multiple nonvolatile memory components that are not in protected memory.

Applicants further note that claims 3, 24, 37, and 49 provide a limitation for a custom logic block that is further described in copending patent applications. It is noted that the custom logic block controls access to memory. However, the multiple nonvolatile memories of the present invention are not controlled by the custom logic block. FIG. 6 of the present invention illustrates the multiple nonvolatile memory components of the system as claimed. There are clearly significant, distinguishable, and nonobvious differences from the system of FIG. 6 as claimed and Kocher (and/or the combination of Kocher with Cohen).

In response to the above, the final Office Action provides that Kocher teaches a system and method that relates to a number of selectable and portable executing devices, each being operatively associated with any one receiving descrambler and each executing identical operations to generate a seed for use by the associated receiving descrambler to enable the receiving descrambler to descramble the broadcast. The final Office Action relies on Kocher Fig. 1-2, col. 4, line 12-66, col 21, line 2-col. 22, line 25. Further the Action provides:

> In particular, fixed data and code are stored in ROM, temporary data (and possibly code) are stored in RAM, and additional code and/or data are stored in EEPROM which can be modified by processor. Also attached to bus is CryptoFirewall, a specialized cryptographic processing unit which regulates and cryptographically modifies data written to or read from protected memory (Fig. 2, col. 9, line 29 to line 59).

Applicants note that RAM is not nonvolatile memory. Further, the CryptoFirewall contains a processing unit itself and merely modifies data written to or read from protected memory (see col. 9, lines 37-41).

As amended, the claims provide that access control to the digital services is distributed among the multiple nonvolatile memory components. Further, separate and independent attacks must be conducted on each of the nonvolatile memory components to gain unauthorized access to the digital services. Thus, rather than being able to attack one nonvolatile memory unit and gaining access to all of the digital services, the present invention provides that all of the nonvolatile memory components must be accessed to gain access to the digital services. Merely accessing one component is insufficient. Applicants again direct the attention of the patent office to paragraphs [0059]-[0068] of the originally filed specification. For example, paragraph [0061] provides as follows:

> **[0061]** To avoid this method of attack, access to the nonvolatile memory components is distributed among several physically separate and independently controlled nonvolatile memory components. Using this approach, it may not be possible to compromise one nonvolatile memory component and march through all memory address locations that reside other memory components. Only the attacked memory component is compromised.

Similarly, paragraph [0065] provides as follows:

> **[0065]** There are many advantages to using a plurality of nonvolatile memory components 606 in a CAM 512. For example, the nonvolatile memory components 606 have physically separate address spaces and physical locations on the die. Further, each nonvolatile memory component 606 would have to be attacked and compromised separately. Separate memory control units can be implemented allowing each control unit to be uniquely customized and tailored to the specific memory module 606 being protected. This design requires each nonvolatile memory component 606 to be attacked separately and individually. Therefore, the entire chip can withstand substantial external attack through the system I/O module 608. Accordingly, the use of such a plurality of nonvolatile memory components enables the protection of video, audio, broadband, and data/digital services reception.

Lastly, paragraph [0068] provides as follows:

> **[0004]** At step 706, digital services are accessed using the nonvolatile memory components 606 to provide desired functionality and enforce security policies for the access. Using the identified configuration with a plurality of nonvolatile memory components 606, if unauthorized access is attempted, separate and independent attacks must be conducted on each nonvolatile memory component 606.

As can be seen, the invention as claimed provides more than merely reciting multiple nonvolatile memory components. Instead, the multiple components control access to the digital services and provide for a more secure environment. Further, the access control is distributed

across the multiple components. Thus, even if one component were compromised, the access to the digital services would not be compromised without also gaining access to the remaining components. The various teachings of Kocher do not even remotely refer to or resemble such an architecture or secure system as claimed. Further, the final Office Action fails to describe how Kocher teaches such explicit and detailed claim limitations.

Again, while Kocher teaches (in FIG. 1 and 2), a memory connected to a microprocessor (Fig. 1), and ROM245 and EEPROM 255 connected to a bus 240 (Fig. 2), neither of the figures depict the limitations of the claims. Further, Kocher's specification also fails to describe the claim limitations. What is notoriously lacking from Kocher is any description of distributing access control to digital services across multiple nonvolatile memory components that have to be separately attacked in order to gain access to the digital services (as claimed). Instead, Kocher merely refers to the use of ROM 245 and EEPROM 255 in addition to the use of protected memory 265 via cryptofirewall 260. Such a use of the cryptofirewall 260 is irrelevant to the present claims since a separate microprocessor exists within the cryptofirewall as described above (while the present claims require a single microprocessor). Thus, Kocher does not and cannot teach the invention as claimed.

Moreover, the various elements of Applicants' claimed invention together provide operational advantages over Cohen and Kocher. In addition, Applicants' invention solves problems not recognized by Cohen and Kocher.

Thus, Applicants submit that independent claims 1, 12, 24, 35, and 47 are allowable over Cohen and Kocher. Further, dependent claims 2-3, 5-11, 13-15, 27-23, 25-27, 29-34, 36-38, 40-46, 48-50, and 52-58 are submitted to be allowable over Cohen and Kocher in the same manner, because they are dependent on independent claims 1, 12, 24, 35, and 47, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 2-3, 5-11, 13-15, 27-23, 25-27, 29-34, 36-38, 40-46, 48-50, and 52-58 recite additional novel elements not shown by Cohen and Kocher.

IV. Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

By: _____
Name: Georgann S. Grunebach
Reg. No.: 33,179

Date: November 7, 2006

The DIRECTV Group, Inc.
CA/LA1/A109
2230 E. Imperial Highway
P. O. Box 956
El Segundo CA 90245

Telephone No. (310) 964-4615